

application directed to the subject matter therein. Claim 2 has been cancelled. Claims 1 and 3-10 are pending after entry of this Response and Amendment.

Restriction Requirement and Election

Applicants' were requested on February 2, 2000 to elect between claims 1-10 of Group 1 drawn to a catalyst composition and claims 11-20 of Group 2 drawn to an oxidative dehydrogenation process.

Applicants herewith confirm the election of the claims of Group 1. Applicants cancel claims 11-20 without prejudice and reserve the right to pursue the non-elected claims in a divisional application.

35 U.S.C. § 103 Rejection of Claims 1-8 and 10 Over Slinkard

Claims 1-8 and 10 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,219,671 (hereafter "Slinkard '671").

The Examiner contends that Slinkard '671 discloses catalyst compositions that are mixed metal oxides containing vanadium, antimony, aluminum and zinc that are encompassed by Applicants' claimed subject matter. The Examiner acknowledges that the cited reference does not identically disclose the amount of each component present as in Applicants' claimed subject matter. The Examiner contends there is overlap between the catalyst ingredients and further contends that the overlapping subject matter constitutes a *prime facie* case of obviousness. Applicants respectfully, but strenuously, traverse this rejection and the arguments and contentions in support thereof for the following reasons set forth below in detail.

The formula in Applicants' claim number 1 reads $A_aB_bSb_cV_dAl_eO_x$, where a is 0 to 0.3, b is 0 to 5, c is 0.5 to 10, d is 1, e is 3 to 10 and $7 \leq a+b+c+d+e \leq 25$. The formula in the Slinkard '617 patent reads $V_fSb_gX_hMe_iO_j$, where f equals 10, g equals 1 to 9, h equals 1 to 9, i equals 0 to 8, $j \geq 20$ and $g+h+i \leq 20$. These two formulae bear only a superficial resemblance to one another because Applicants' claimed subject matter recites a formula normalized to have vanadium at an atomic ratio of 1, i.e., d is 1, whereas Slinkard '617 has vanadium set at an atomic ratio of 10, i.e., f equals 10. To properly appreciate the differences between the two formulae, the Slinkard formula is normalized to the same vanadium ratio as Applicants' formula by dividing all of the atomic values in the Slinkard formula by 10 to normalize the atomic ratio of vanadium to 1. This will result in the normalized Slinkard subscripts now reading f equals 1, g equals 0.1 to 0.9, h equals 0.1 to 0.9, i equals 0 to 0.8, $j \geq 2.0$ and $g+h+i \leq 2.0$.

On this common basis, it can be seen that the aluminum content in Applicants' claimed subject matter ranges from 3 to 10 whereas the normalized Slinkard '617 formula has an aluminum content only ranging from 0 to 0.8. It is clear that there is no overlap in the aluminum content of Applicants' claimed subject matter and that of Slinkard '617. Slinkard does not teach or suggest any composition or formulation that would provide an aluminum content greater than 0.8 which is significantly lower than Applicants' minimum aluminum content of 3. 52

Applicants have shown by putting Applicants' formula and the Slinkard '617 formula on a common basis that the subject matter of Applicants' claims and the subject matter of the Slinkard '617 patent are not overlapping subject matter because Slinkard '617 teaches an aluminum content lower than the lowest permissible aluminum content in Applicants' claimed subject matter. Therefore, a *prime facie* case of obviousness has not been established. Also, catalysis is considered an unpredictable art. Since catalysis is an unpredictable art and Slinkard '617 does not teach or suggest formulas that would permit an aluminum content greater than 0.8, the disclosure in Slinkard '617 is insufficient to teach or suggest Applicants' claimed subject matter which includes formulations having an aluminum content in the range of 3 to 10.

Applicants respectfully submit that amended claims 1 and 3-10 are patentable over Slinkard '617 and respectfully request reconsideration and withdrawal of this rejection.

35 U.S.C. § 103(a) Rejection of Claims 1-10 over Sasaki

The Examiner has rejected claims 1-10 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,139,988 (hereafter "Sasaki '988").

The Examiner contends Sasaki '988 discloses catalyst compositions that are mixed metal oxides containing iron, antimony, vanadium, and at least one of alkali or alkaline earth metals and aluminum. The Examiner acknowledges that the prior art does not identically disclose the amounts of each component present in Applicants' claimed subject matter. The Examiner contends there is an overlap between the catalyst ingredients. Applicant respectfully, but strenuously, traverse this rejection and the arguments and contentions in support thereof for the reasons set forth below in detail.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make

the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. MPEP § 2142

Applicants respectfully submit the amended claims 1 and claims 3-10 depending from amended claim 1 which recite a claim element of an amorphous structure for Applicants' catalyst are patentable over Sasaki '988. Sasaki '988 does not teach or suggest an amorphous catalyst. To the contrary, a crystalline iron antimonate structure is required by Sasaki '988. See, Sasaki '988 at column 2 lines 57-58; column 3 lines 6-12; column 3 lines 36-38; column 4 lines 53-56; column 5 lines 35-37.

Applicants respectfully submit that Sasaki '988 does not teach or suggest all of the claim elements of Applicants' claimed subject matter since Sasaki '988 fails to teach or suggest an amorphous catalyst. Since Sasaki '988 fails to teach or suggest all of the claim elements of Applicants' claims subject matter, no *prima facie* conclusion of obviousness has been established. Further, no *prima facie* conclusion of obviousness has been established since there is no motivation to use Applicants' amorphous catalyst or reasonable expectation of success of Applicants' amorphous catalyst because Sasaki '988 discloses and claims only crystalline catalysts. Applicants respectfully request reconsideration and withdrawal of this rejection.

35 U.S.C. §103(a) Rejection over Hinago

The Examiner has rejected claims 1 through 10 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,063,728 (hereafter "Hinago '728").

The Examiner contends Hinago '728 disclose catalyst compositions that are mixed metal oxides containing molybdenum, antimony, vanadium, and at least one of alkaline earth metals and aluminum. The Examiner acknowledges the cited reference does not identically disclose the amounts of each component present in Applicants' claimed subject matter. The Examiner contends there is an overlap between the catalyst ingredients and further contends the overlapping subject matter constitutes a *prime facie* case of obviousness. Applicants strenuously, but respectfully, traverse this rejection and the arguments and contentions in support thereof for the reasons set forth below in detail.

Applicants respectfully submit that amended claims 1 and 3-10 are patentable over Hinago '728. Hinago '728 fails to disclose or suggest a catalyst composition having an amorphous structure. To the contrary, Hinago '728 discloses and claims only catalyst compositions that have a specific ratio of peak intensities acquired by X-ray diffraction of catalyst compositions having crystalline structures. Applicants' amorphous catalyst

compositions, as recited in Applicants' amended claims 1 and 3-10, do not have a crystalline structure to provide sharp peaks during X-ray diffraction. Applicants respectfully submit that Hinago '728 fails to teach or suggest all of the elements of Applicants' claimed subject matter. Further, since the crystalline structure of Hinago '728 do not provide a motivation to use an amorphous catalyst or provide a reasonable expectation of success using an amorphous catalyst, no *prima facie* conclusion of obviousness is established based on Hinago '728.

Applicants respectfully submit that amended claims 1 and 3-10, depending from amended claim 1, are patentable over Hinago '728 and request reconsideration and withdrawal of the rejection.



CONCLUSION

Applicants respectfully submitted amended claim 1 and claims 3-10, depending from amended claim 1, are in allowable form and request a Notice of Allowance be issued.

If the Examiner has any questions or wishes to discuss the claims as amended, he is respectfully requested to call the undersigned attorney at the telephone number indicated below.

Respectfully submitted,

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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231 on the 18 day of August, 2000.

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